Mercury Control and Cost for Major Utilities
Summary Sheet

Mercury Control and Cost Estimate

- The cost reflect use of the most promising technology (surrogate technology) to measure mercury control and cost over a specific installation schedule. It is likely that other technologies will emerge with equal capability and a lower cost compared to the surrogate technology.

- The surrogate technology uses combinations of activated carbon injection and a dedicated polishing fabric filter.

- The costs include equipment purchases, installation, operation and maintenance. The surrogate technology preserves 95% of flyash generated by units with the fabric filter system. The lost revenue and disposal cost is included for the remaining unusable portion of flyash.

- A cost range is provided. The "expected" case represents equipment and actions required for mercury control. The "high" case represents additional modifications or action to mitigate potential operational impacts or requirements to achieve the assumed control efficiencies.

- Annual costs anticipate control equipment installations occur from 2010 through 2015 (year 7 through 12 of surrogate installation schedule). The cost ramps up over this time with each additional installation. The annual cost is anticipated to continue from year 12 to 20 based on equipment lifetime. Cost will likely begin to decline after year 20 as equipment or generation units begin to be retired or replaced. No estimate is made of the resulting costs.

Incremental Cost of Surrogate Control Technology

Cost Case	Schedule Year						Outgoing Years	
	2010	2011	2012	2013	2014	2015	2030	2035
	7	8	9	10	11	12	20	25
Million Dollars per Year								
Expected	28	30	56	71	81	87	87	<87
High	33	35	66	84	96	104	104	<104
Cents per Kilowatt-hour								
Expected	0.06	0.07	0.12	0.16	0.18	0.19	0.19	<0.19
High	0.07	0.08	0.15	0.18	0.21	0.23	0.23	<0.23

Incremental Cost of Surrogate Control Technology to the Average Consumer (dollars per year)

Sector	Unit	Indices	7th Year ($/year)		12 Year ($/year)	
			Expected	High	Expected	High
Residential	Household	9,240 kWh/year (1)	6	7	18	21
Commercial	Customer	60,513 kWh/year (1)	37	44	116	138
Industrial	Net Proceeds	0.46 kWh/$1000 (2)	0.28	0.33	0.88	1.05
	Value Shipped Product	0.21 kWh/$1000 (3)	0.13	0.16	0.41	0.49

Comparison to Control and Cost of other Pollutants

- The cost of operating the surrogate control technology is comparable to EPA estimates of NOx and SOx control.

Pollutant	**Control Efficiency**	**cents / kWh**
Hg	80%	0.19 – 0.23
NOx – Low NOx Burners	50%	0.021 – 0.083
NOx – Selective Catalytic Reactor	80 - 90%	0.185 – 0.361
SOx	80 – 90%	0.6 – 0.8

- In comparison, Wisconsin's current NOx reduction program affects five utility facilities in eight southeast counties. The NOx rule established a 40 – 50% reduction across these facilities with an estimated annual cost of 8 – 10 million dollars per year or 0.03 – 0.04 cents per kilowatt hour. Based on information submitted in a NOx control docket to the Public Service Commission in 2000 it is estimated a statewide NOx rule achieving a 80 – 90% reduction would have an annual cost of 70 – 100 million dollars per year or 0.15 – 0.22 cents per kilowatt-hour. Technology advancements since this time may result in a lower cost.

- A multi-pollutant approach for mercury and any one of particulate, sulfur dioxides, and nitrogen oxide pollutants has the potential to reduce the cost attributed to control of the individual pollutants. Control of particulate and sulfur dioxides is anticipated to be synergistic with mercury control. The control of NOx may provide some benefit but is more independent of mercury control based on current information.

Cost of Monitoring and Determining Compliance

- The cost of compliance determination for the major stationary sources is anticipated to consist of compiling existing data, maintaining records of appropriate fuel consumption or process utilization, and performing calculations necessary to determine mercury emissions. It is anticipated that no or minimal emissions, fuel, or process stream testing will be required to determine annual emissions.

- The cost of compliance determination for the major utilities consists of two separate actions. 1) The initial mercury baseline and unit control efficiency determination. The cost is approximately 490,000 dollars or 12,000 dollars per boiler based on monthly fuel mercury testing in 2004 and one stack emission test. 2) The major utilities begin monitoring and testing in 2008 to demonstrate annual compliance. The annual cost is estimated to be 220,000 dollars or 5,200 dollars per unit based on monthy fuel sampling and stack testing every two years for units larger than 200 MW or every four years for small units.